

WHAT IS CLAIMED IS:

1. A joint structure of a robot for actuating an assembly being connected to a robot link, the joint structure comprising:

5 a first motor for causing the assembly a longitudinal swing motion with respect to the robot link; and

a second motor for causing the assembly a lateral swing motion with respect to the robot link, wherein

10 the first motor and the second motor are disposed so that the output shaft of the first motor and the output shaft of the second motor are in parallel with each other and are orthogonal to the robot link.

2. A joint structure of a robot according to claim 1 further comprising:

a third motor for causing the assembly a rotary motion with respect to the robot link, wherein

20 the output shaft of the third motor is shifted by a predetermined amount with respect to the central axis of the rotary motion.

3. A joint structure of a robot according to claim 1 or claim 2 further comprising:

25 a movable cover being rotatable with respect to at least one of the assembly and the robot link, and

an elastic member generating a force between the movable

cover and at least one of the assembly and the robot link, and placing the movable cover at a predetermined position.

4. A joint structure of a robot according to claim 1 or claim  
5 2 further comprising:

a first rotary unit being connected to the assembly;

a second rotary unit supporting the first rotary unit while allowing the rotation around a first axis of the first rotary unit; and

- 10 a base supporting the second rotary unit while allowing the rotation around a second axis orthogonal to the first axis of the second rotary unit, wherein

the first motor and the second motor are disposed on the base.

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5. A joint structure of a robot according to claim 4 further comprising:

a first swing lever which is connected to an output shaft of the first motor, and changes the rotation of the output shaft  
20 of the first motor into a reciprocating motion;

a joint which is connected to the first swing lever and the first rotary unit, and transfers the reciprocating motion to the first swing lever to rotate the first rotary unit around the first axis;

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a second swing lever which is connected to an output shaft of the second motor, and changes a rotary motion of the output

shaft of the second motor into a reciprocating motion; and

a rod which is connected to the second swing lever and the second rotary unit, and transfers the reciprocating motion to the second rotary unit to rotate the second rotary unit around

5 the second axis.

6. A joint structure of a robot according to claim 4 further comprising:

a motor side pulley which is connected to an output shaft  
10 of the third motor;

a driven pulley which is connected to the base and rotates the base around the central axis of the rotary motion; and

a belt which transfers the rotation of the motor side pulley to the driven pulley.

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7. A joint structure of a robot according to claim 5 further comprising:

a motor side pulley which is connected to an output shaft of the third motor;

20 a driven pulley which is connected to the base and rotates the base around the central axis of the rotary motion; and

a belt which transfers the rotation of the motor side pulley to the driven pulley.

25 8. A joint structure of a robot according to claim 3, wherein a contact face to which the elastic member is contactable

is formed on the movable cover, and

a stopper, which contacts with the elastic member to control the range of the rotation around the central axis of the rotary motion of the movable cover, is provided at an inside  
5 periphery of the movable cover.